

Native Prairie

establishment & management of native prairie

Where to plant a prairie

Selecting the proper site can be critical in establishing native prairie reconstructions. Key considerations for selecting a prairie site are:

- good weed control
- no noxious weeds
- existing competing vegetation
- herbicide carryover present
- soil type

Weed control prior to planting is critical. Cropped sites that have good weed control often work best.

Controlling existing cool season perennial vegetation is essential to successful native prairie reconstructions.

In the fall prior to planting:

- chemically kill the existing vegetation
or
- till the vegetation to destroy the existing cover.

Selecting the seeding mixture

Prairie reconstruction should be customized to meet landowner objectives. A **minimum of five species of native grasses** and **10 species of native forbs or legumes should be used**. Mixtures may be developed using NRCS's conservation cover standard. Here are some general guidelines:

- Develop all mixtures based on pure live seed.
- Seed must be cleaned and weed free.
- Exclude or keep aggressive grasses like switchgrass or other aggressive cultivars to a minimum.
- Consider soil types when selecting mixture.
- If the site is within one mile of an existing native prairie—not a restored prairie—local ecotypes are recommended.
- Select species that meet the moisture regime of the site (D-Dry, DM-Dry Mesic, M-Mesic, MW-Mesic Wet, W-Wet).
- Select species that meet the habitat preference for the site (P-Prairie, S-Savanna, W-Woodland).
- Select a variety of species that offer some flowering throughout the growing season to provide insects for wildlife food source.

(See next page for seeding recommendations.)

Establishment

Native prairies add diversity to the landscape and serve as excellent wildlife habitat.



Grasses	% of Mixture (Range Allowed)		Moisture Regime	Pure stand seeding rate PLS pounds/acre
	Habitat Preference			
Big bluestem	P, S		D, DM, M, WM	10
Blue grama	P		D	2
Buffalograss	P		D, DM	6
Canada wildrye	P, S		DM, M, WM	14
Eastern gamagrass	P		M, MW, W	10
June grass	P		D, DM, M	1
Indiangrass	P		D, DM, M, WM	8
Little bluestem	P, S		D, DM, M	7
Porcupine grass	P		D, DM	10
Prairie dropseed	P		D, DM, M	1.5
Rough dropseed	P		D, DM, M, WM	1
Sand dropseed	P		D, DM	0.5
Sand lovegrass	P		D	1.5
Sideoats grama	P, S		D, DM	9
Switchgrass	P, S		D, DM, M, WM	4
Virginia wildrye	P, S, W		WM, W	20
Western wheatgrass	P		DM, M	14
Prairie cordgrass	P		M, WM, W	groupings 1 plug/sq ft in linear plantings 3 feet between rows
Bluejoint reedgrass	P		WM, W	groupings 1 plug/sq ft in linear plantings 3 feet between rows

Forbs & Legumes	Lifecycle	Habitat Preference	Moisture & Regime	Flower Period	Suggested Seeding Rate PLS ounces/acre
Alumroot	Perennial	P	D, DM, M	Apr-June	0.5 oz
Aromatic aster	Perennial	P	D, DM, M	Late Summer	3 oz
American germander	Perennial	P, S, W	M, WM	Summer	4 oz
Bird's foot violet	Perennial	P	D, DM	Apr-June	1 oz
Black-eyed susan	Biannual	P, S	D, DM, M, WM	July-Sept	1 oz
Blue-eyed grass	Perennial	P, S	D, DM, M	Mid Spr-Early Sum	0.5 oz
Bottle gentian	Perennial	P, S	M	Late Sum-fall	2 oz
Butterfly milkweed	Perennial	P, S	DM, M	June -Aug	3 oz
Canada or Tall goldenrod	Perennial	P, S	DM, M, WM	Sept	0.5 oz
Cardinal flower	Perennial	P, S	WM, W	Aug	0.5 oz
Compass plant	Perennial	P	DM, M	Jun-Sept	4 oz
Cream false indigo	Perennial	P, S	D, M	June	4 oz
Culver's root	Perennial	P, S	M, WM, W	Summer	0.1 oz
Cup plant	Perennial	P, S	M, WM, W	Jul-Sept	2 oz
Dotted blazing star	Perennial	P	D, DM, M	Aug-Sept	2 oz
Downy gentian	Perennial	P, S	M, WM	Sept-Oct	1 oz
Evening primrose	Perennial	P, S	D, DM, M	Aug-Sept	1 oz
False indigo	Perennial	P, S	DM, M	June	4 oz
Feverfew-Wild quinine	Perennial	P	WM, M, DM	Jun-Aug	4 oz
Flowering spurge	Perennial	P	D, DM, M	June-September	2 oz
Foxglove beardedtongue	Perennial	P, S	M	Late Spr-Mid Sum	0.5 oz
Fringed gentian	Biannual	P	WM, W	Sept-Oct	.5 oz
Fringed loosestrife	Perennial	P, W	WM, W	Late Spr-Summer	1 oz
Golden alexanders	Perennial	P, S, W	M, MW	Mid Spr-Early Sum	1 oz
Great blue lobelia	Perennial	P, S	W, WM	Mid Sum-Fall	0.5 oz
Gray-headed coneflower	Perennial	P, S	D, DM, M, WM	July-Sept	2 oz
Ground plum	Perennial	P, S	D, DM	Early May	2 oz
Heartleaf golden alexanders	Perennial	P, S	M	Mid Spr-Early Sum	1 oz
Heath aster	Perennial	P, S	D, DM, M	Aug-Oct	0.5 oz
Hoary puccoon	Perennial	P	D, DM	May	5 oz
Hoary vervain	Perennial	P	D	Late Spr-Early Fall	2 oz
Il. bundle flower	Perennial	P	DM, M	Late Spr-Summer	4 oz
Lousewort	Perennial	P, S	DM	May-June	1 oz
Maximillian sunflower	Perennial	P, S	DM, D	July-Aug	3 oz
Milk vetch	Perennial	P	M	Summer	1 oz
Mountain mint	Perennial	P, S	DM, M, WM	Mid Sum-Early Fall	1 oz
New England aster	Perennial	P, S	M, WM	Aug-Oct	1 oz
Old field (Gray) goldenrod	Perennial	P, S	D, DM, M	Late Sum-Fall	1 oz
Ox-eye or False sunflower	Perennial	P, S	M	June-Sept	2 oz
Pale gentian	Perennial	P	M, WM	Sept-Oct	0.5 oz
Pale purple coneflower	Perennial	P	M	Mid-Late Spr	4 oz
Partridge pea	Annual	P, S	DM, M	July-Sept	4 oz
Pasque flower	Perennial	P	D, DM	Early-Mid Spr	2 oz
Prairie sage	Perennial	P, S	D, DM, M	Aug-Sept	4 oz
Prairie blazing star	Perennial	P	DM, M, WM	Mid Sum-Early Fall	4 oz
Prairie cinquefoil (potentilla)	Perennial	P, S	D, DM, M	Late Spr-Sum	0.5 oz
Prairie coneflower	Perennial	P, S	D, DM, M, WM	July-Sept	0.5 oz
Prairie coreopsis	Perennial	P, S	D, DM, M	June	1 oz
Prairie larkspur	Perennial	S, W	D, DM, M	June	0.5 oz
Prairie mimosa	Perennial	P	D, DM, M	July-Aug	1 oz
Prairie phlox	Perennial	P, S	DM, M	Mid Spr-Mid Sum	1 oz
Prairie ragwort	Perennial	P	D, DM, M	May-June	1 oz
Prairie smoke	Perennial	P, S	D, DM	Mid-Late Sum	1 oz
Prairie violet	Perennial	P	D, DM, M	Spr - Fall	1 oz
Purple coneflower	Perennial	S	M	Jun-July	4 oz
Purple meadow rue	Perennial	P	M, WM	May-June	1 oz
Purple prairie clover	Perennial	P	D, DM, M	July-Aug	3 oz
Rattlesnake master	Perennial	P	DM, M	Jun-Aug	2 oz
Rigid or Stiff goldenrod	Perennial	P	D, DM, M	Aug-Oct	0.5 oz

Forbs & Legumes	Lifecycle	Habitat Preference	Moisture & Regime	Flower Period	Suggested Seeding Rate PLS ounces/acre
Rosin weed	Perennial	P	DM, M	July-Sept	8 oz
Roundhead lespedeza	Perennial	P, S	D, DM, M	July-Sept	3 oz
Rough blazing star	Perennial	P, S	D, DM, M	Aug-Sept	2 oz
Saw-tooth sunflower	Perennial	P, S	D, DM, M	July-Aug	0.1 oz
Seedbox	Perennial	P	M, MW, W		0.1 oz
Shooting star	Perennial	P, S	D, DM, M	Late July-Aug	1 oz
Showy goldenrod	Perennial	P, S	DM, M	July-Oct	0.5 oz
Showy Sunflower	Perennial	P	DM, M	July-Sept	4 oz
Showy tick trefoil	Perennial	P, S	M, WM	July-Aug	3 oz
Silky Aster	Perennial	P, S	D, DM	Late Sum-Fall	1 oz
Sky blue aster	Perennial	P, S	D, DM, M	Late Sum-Fall	1 oz
Smooth blue aster	Perennial	P, S	DM, M	Aug-Oct	1 oz
Sneezeweed	Perennial	P	WM, W	Aug-Sept	1 oz
Spiked lobelia	Perennial	P	DM, M	Mid Spr-Mid Sum	0.5 oz
Spiderwort	Perennial	P, S	D, DM, M	May-June	2 oz
Spotted St. John's wort	Perennial	P, S	WM	June-Aug	1 oz
Swamp buttercup	Perennial	S, W	W, WM	Apr-July	1 oz
Sweet black-eyed Susan	Perennial	P, S	M	Summer	1 oz
Tall or Canada goldenrod	Perennial	P, S	D, DM, M	September	0.5 oz
Tall tickseed or Tall coreopsis	Perennial	P, S	M, MW	Summer	1 oz
Thimbleweed	Perennial	P, S	D, DM, M	Late Spr-Mid Sum	1 oz
White heath aster or Frost aster	Perennial	P, S	D, DM, M	Sept-Oct	1 oz
White prairie clover	Perennial	P	DM, M	Late Spr-Summer	4 oz
White sage or Prairie sage	Perennial	P, S	D, DM, M	Aug-Oct	0.5 oz
Whorled milkweed	Perennial	P	D, DM, M	Jun-Aug	4 oz
Wild bergamont or Bee balm	Perennial	P, S	D, DM, M	Mid Spr-Early Sum	1 oz
Wild Quinine-Feverfew	Perennial	P	WM, M, DM	Jun-Aug	4 oz
Yellow stargrass	Perennial	P, S	M, WM	May-June	1 oz

of prairie plants

Seedbed preparation

Prepare a firm seedbed for all planting methods.

If the seedbed is to be tilled:

- Prepare a fine firm seedbed at least 3 inches deep.
- Cultipack before and after seeding. This is critical for seeding establishment.
- Do not use heavy drills to seed on conventionally tilled seedbeds. Heavy drills tend to sink into the soil and it's very hard to control seed depth.
- Plant seed no more than one-quarter inch deep; some seed may be seen on the surface after seeding.

Tillage makes sites prone to erosion and should only be used on flatter slopes or in conjunction with erosion protection measures such as cover crops or mulching.

No-till drilling reduces the exposure of the newly seeded site to erosion and offers good seed-to-soil contact. No-till planting:

- Works best on areas that were previously in row crop and have a firm seedbed.
- Select a drill that can handle low seeding rates and a wide variety of seed (fluffy, smooth, large, small).
- Plant seed no more than one-quarter inch deep; some seed may be seen on the surface after seeding.
- Control existing vegetation and weeds with herbicide, such as glyphosate.

If you decide to no-till into existing sod, take extra precautions to assure a good seedbed. Land in grass for many years usually has a thick residue layer on the soil surface. This residue should be removed, if possible for best seedbed preparation. Remove residue by grazing, burning, mowing and removing the residue, or using conventional fall tillage and preparing a firm seedbed.

Preparation for no-till: It is best to mow the vegetation in late summer. Two to four weeks after mowing, a burndown herbicide should be applied to emergent growth. This prepares the seedbed for no-tilling the following spring.

Another herbicide treatment may be needed in the spring, depending on plant growth. A controlled or prescribed burn may be a good way to remove accumulated plant litter prior to seeding. NRCS staff can help you develop a prescribed burn plan.

Cover crops are not generally recommended for warm season grass seedings. However, when seedbed preparation is conducted during the year previous to seeding, Sudangrass or oats may be seeded as a temporary cover. Both crops will winter kill and the prairie seeds can be drilled directly into this crop residue. Seed sudangrass at 25 pounds per acre or oats at 1 bushel per acre.

Establishment of prairie plants

Seeding

Spring is the traditional time to seed plants and seeding can be quite successful at that time.

Here is a general guide for seeding dates:

Type of seeding	Native species
Spring	April 1 - July 1
Dormant	Nov. 15 - freeze-up
Frost	Feb. 1 - March 15

Seeding dates may be extended up to two weeks when moisture conditions are favorable. Check with local district conservationists if you are considering seeding at another time.

Spring seedings will favor warm season grasses over forbs, unless forb seed has already been stratified. Place seeds in moist sand at a temperatures between 32 and 41 degrees for two to four months to stratify.

Late dormant seedings offer an excellent opportunity to establish a diverse stand. Dormant seedings tend to favor forbs and there is less competition with other planting activities. Dormant seeding exposes seed to predation by wildlife. Seed late enough that the seed will not germinate in the fall.

Small, smooth seeds readily **frost-seed** into the soil and stratification is assured.

Mowing for weed control:

To manage weed competition and keep the amount of material from laying on new seedlings and smothering them, mow when weeds are a few inches above the seedling height. Mowing height should be just above the new native seedling or no closer than 8 inches. Mow early before the weeds have a chance to smother out the natives and about every two weeks throughout the first growing season to keep competitors from shading young plants.

Chemical weed control:

Three herbicides, Atrazine, Pursuit*, and Plateau* are labeled for limited use on native seedings. Atrazine and Pursuit generally work with certain grasses only. Plateau is labeled for grasses, some forbs and legumes. Refer to product label for specific application information.

**NRCS does not endorse the use of any product. At the time of printing, these products were the only products staff were aware of. There may be other products available. Check labels for specific uses.*

Maintaining fertility

Fertilizing is not recommended for establishing native prairie plantings. However, if the stand appears inadequate after two years consider soil testing to determine if fertility is lacking.

Controlling weeds

Post-planting weed control requires prompt attention on all sites during the establishment year.

- Inspect the planting every two to four weeks for weed pressure.
- Light infestations of foxtail or broad-leaved weeds during the establishment year are generally not considered to be a problem.
- Severe infestations of noxious or highly competitive weeds may require spot spraying. A broadcast herbicide, like Pursuit, is available to control weeds in some prairie reconstruction planting. Mowing, spot

spraying and burning are the other feasible alternatives.

Establishment period

- Controlling competition is important when establishing native prairies. Weeds should be controlled chemically or by mowing. It is important to mow early and often to assure adequate control and to not smother young seedlings.

After establishment:

- Evaluate the stand to determine if mowing for weed control is necessary. If it is, mow just above new seedling height or about 8 inches.
- If there is enough material for a spring burn, burning may be used for weed control. Spring burns will tend to encourage warm season species and work well to control cool season plants. Burn in the spring when the cool season plants are growing and the warm season plants are barely starting to grow. Usually late April or early May works best.

Evaluating the prairie stand

It may be hard to determine if the prairie reconstruction is successful, particularly during the seeding year. If, during the seeding year, a prairie seeding has more than 0.25 seeded plants per square foot, it should be considered a success. It may take 2-5 years for a planting to be fully adequate. Be patient.

Managing the established prairie

Established prairies may need management treatments for a variety of reasons. Most important is the removal of accumulated plant litter which can impede light and moisture penetration. Exposing growth points to sunlight and recycling nutrients tied up in old growth, as in a prescribed burn, generally stimulates vigorous new growth.

Controlling woody plants or invasive weed species, which can overrun a planting, is critical. Properly timed management, especially a properly timed burn, can stimulate tillering in new plantings, accelerating the establishment of newly seeded native grasses.

A burn in the spring of the second or third year after planting is strongly recommended. Fire management reduces the risk of large and potentially damaging wildfires by removing accumulations of old growth. Burn timing and frequency will impact the species that are present on the site. For longevity of the site, burning should be conducted periodically, every two to five years.

NRCS will help you develop a burn plan. A minimum 30 foot strip of cool season grass around a prairie site is recommended as a fire break and part of a burn plan.